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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,561	06/30/2003	Yong Sung Ham	8733.823.00-US	7264
7590	06/17/2004		EXAMINER CHUNG, DAVID Y	
SONG K. JUNG McKenna Long & Aldridge LLP 1900 K Street, NW Washington, DC 20006			ART UNIT 2871	PAPER NUMBER

DATE MAILED: 06/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/608,561

Applicant(s)

HAM ET AL.

Examiner

David Y. Chung

Art Unit

2871



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9-11, 13-29 and 33-35 is/are rejected.
- 7) ☒ Claim(s) 6-8, 12, 30-32 and 36 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-5, 9-11, 13, 14, 16-21, 29 and 33-35 rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al. (U.S. 6,100,953).**

As to claims 1, 13, 14 and 16, Kim et al. discloses a multi-domain liquid crystal with a concave portion in the color filter. Note in figures 2A-3B and 5A-6B, gate bus lines 1, data bus lines 3, pixel electrodes 13, color filters 23, and common electrode 19. The color filter 23 has a concave hole or groove 19 formed therein. See column 3, line 60 – column 4, line 21. The display comprises first and second substrates facing each other, and a liquid crystal layer between them. See column 3, lines 15-20. Kim et al. discloses that a polarizer is formed on at least one substrate, with an axis of 45°, 135°. See column 6, lines 13-17.

As to claims 2 and 20, the liquid crystal may include molecules having positive or negative dielectric anisotropy. See column 5, lines 54-56.

As to claims 3 and 21, the liquid crystal may include chiral dopants. See column 5, lines 54-56.

As to claims 4, 17, 18 and 19, figures 5A-6B show the various shapes of the hole or groove. Figure 6B shows a cross-shaped hole or groove, figure 5B a horizontal hole or groove, figure 5C a vertical hole or groove, figure 5D a diagonal hole or groove, and figure 6A an X-shaped hole or groove.

As to claims 5 and 29, Kim et al. discloses forming the hole or groove in the color filter by etching. See column 5, lines 14-30.

As to claims 9 and 33, figures 5A-6C show the pixel electrode 13 overlapped with the data bus line 3.

As to claims 10 and 34, figures 2B and 3B show an overcoat layer 45 formed on the color filter 23.

As to claims 11 and 35, figures 3A, 3B and 7A-8D show a common auxiliary electrode 15 at the periphery of the pixel electrode.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 22-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (U.S. 6,100,953).**

Figures 5A-6B show the various shapes of the hole or groove. Figure 6B shows a cross-shaped hole or groove, figure 5B a horizontal hole or groove, figure 5C a vertical hole or groove, figure 5D a diagonal hole or groove, and figure 6A an X-shaped hole or groove.

Kim et al. does not disclose arranging the polarizers such that their axis of polarization is in the same direction as the direction of the holes or grooves. However, the exact arrangement of the polarizers was a matter of design choice because as long as the polarizers were orthogonal, the display would function substantially the same. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to arrange the polarizers such that their axis is in the same direction as the holes or grooves because this was a matter of design choice.

**Claim 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (U.S. 6,100,953) in further view of Kim et al. (U.S. 6,704,083).**

Kim et al. (U.S. 6,100,953) does not disclose arranging the polarizers in parallel. However, it was well known to arrange the polarizers in parallel when operating the liquid crystal display in a normally white mode. This is shown in Kim et al. (U.S. 6,704,083). See column 3, line 61 – column 4, line 2. Choosing between normally white and normally black mode was a matter of design choice. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to arrange the polarizers to be parallel to each other because this was a matter of design choice.

***Allowable Subject Matter***

Claims 6-8, 12, 30-32 and 36 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claims 6-8 and 30-32 the following is a statement of reasons for the indication of allowable subject matter: the prior art of record did not teach or suggest either a dielectric protrusion corresponding to the center of the hole or groove or an electric field inducing window corresponding to the center of the groove. The electric field inducing window is interpreted to be a no-electrode region.

As to claims 12 and 36 the following is a statement of reasons for the indication of allowable subject matter: figures 3A and 3B of Kim et al. (U.S. 6,100,953) clearly show that the common auxiliary electrode 15 does not overlap with pixel electrode 13.

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This does not seem to have been obvious since overlapping the two electrodes would require forming them in different layers, and this would have been a significant modification to the structure of the device.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Chung whose telephone number is (571) 272-2288. The examiner can normally be reached on Monday-Friday from 8:30 am to 5:00 pm.

  
TOANTON  
PRIMARY EXAMINER